

UNITED STATES PATENT APPLICATION

H. GeorgePires

What is claimed is:

Independents 1, 11, 16, 20, 21, 24

1. A system for monitoring the wetness condition of a diaper, the system comprising:

a sensor coupled to the diaper, said sensor having a first predetermined electrical characteristic when the associated diaper is dry and a second predetermined electrical characteristic when the associated diaper is wet;

a detachable transmitter installable on the diaper, said detachable transmitter, when installed on the diaper, being electrically coupled to said sensor, said detachable transmitter being in a quiescent mode when said sensor is characterized by the first predetermined electrical characteristic and in a transmission mode when said sensor is characterized by the second predetermined electrical characteristic, said detachable transmitter transmitting electromagnetic energy signals when in the transmission mode ; and

a receiver for receiving the electromagnetic energy signal transmissions from said detachable transmitter when said detachable transmitter is in the transmission mode.

2. The system of claim 1, wherein there is further provided a coupling arrangement for simultaneously coupling said detachable transmitter onto the diaper and forming the electrical coupling with said sensor.

3. The system of claim 2, wherein said coupling arrangement comprises a snap arrangement formed of first and second detachably engaging portions, the first engaging portion being installed on the diaper and electrically coupled to said sensor, and the second engaging portion being installed on said detachable transmitter and electrically coupled thereto.

UNITED STATES PATENT APPLICATION

H. GeorgePires

4. The system of claim 3, wherein the first engaging portion is a female conductive portion of the snap arrangement and the second engaging portion is a male conductive portion of the snap arrangement.

5. The system of claim 1, wherein said detachable transmitter is provided with a visual indicator responsive to said detachable transmitter being in the transmission mode.

6. The system of claim 1, wherein said detachable transmitter is contained within a hermetically sealed housing.

7. The system of claim 1, wherein said receiver is arranged to be portable.

8. The system of claim 7, wherein said receiver is battery operated.

9. The system of claim 1, wherein said detachable transmitter issues an identifier code when in the transmission mode, the identifier code being encoded in the electromagnetic energy signals.

10. The system of claim 9, wherein said receiver is arranged to produce a human readable indication associated with said detachable transmitter in response to the identifier code.

UNITED STATES PATENT APPLICATION

H. GeorgePires

11. A system for monitoring a diaper, the system comprising:

a sensor associated with the diaper, the sensor having a first predetermined electrical characteristic when the associated diaper is dry and a second predetermined electrical characteristic when the associated diaper is wet;

a detachable transmitter installed on the diaper and coupled electrically to said sensor, said detachable transmitter having a quiescent mode responsive to said sensor when the associated diaper is dry and a transmission mode responsive to said sensor when the associated diaper is wet, said detachable transmitter transmitting a unique identification code within electromagnetic energy signals that are transmitted when said detachable transmitter is in the transmission mode; and

a receiver for receiving the electromagnetic energy signal signals from said detachable transmitter and issuing a perceptible indication, the perceptible indication being responsive exclusively to the identification code transmitted by the detachable transmitter.

12. The system of claim 11, wherein the electromagnetic energy signals are in the radio frequency range.

13. The system of claim 11, wherein the electromagnetic energy signals are in the infrared frequency range.

14. The system of claim 11, wherein said receiver is portable.

15. The system of claim 11, wherein there is further provided a coupling arrangement for simultaneously coupling said detachable transmitter onto the diaper and forming an electrical coupling between said detachable transmitter and said sensor.

UNITED STATES PATENT APPLICATION

H. GeorgePires

16. A system for monitoring a plurality of diapers, each diaper being worn by a respective one of a plurality of patients, the system comprising:

a plurality of sensors, each associated with a respective one of the diapers, each sensor having a first predetermined electrical characteristic when the associated diaper is dry and a second predetermined electrical characteristic when the associated diaper is wet;

a plurality of independent transmitters, each coupled to an associated one of the sensors, each transmitter having a quiescent mode when the associated diaper is dry and a transmission mode when the associated diaper is wet, each transmitter in a transmission mode transmitting independently bursts of electromagnetic energy signals at respective intervals; and

a receiver for receiving the electromagnetic energy signal transmissions from each of said plurality of independent transmitters that is in its transmission mode, each electromagnetic energy signal transmission containing information responsive to a transmitter identification code of the respective transmitting independent transmitter.

17. The system of claim 16, wherein there is further provided a transmitter identification code generator in each of said plurality of independent transmitters for generating the associated transmitter identification code.

18. The system of claim 16, wherein there is further provided a programming station for programming each of said independent transmitters with a patient identification code responsive to the identification of a respectively associated patient.

19. The system of claim 16, wherein there is further provided a control processor for processing the information in each transmission.

UNITED STATES PATENT APPLICATION

H. GeorgePires

20. A system for monitoring a plurality of diapers, each diaper being worn by a respective one of a plurality of patients, the system comprising:

a plurality of sensors, each associated with a respective one of the diapers, each sensor having a first predetermined electrical characteristic when the associated diaper is dry and a second predetermined electrical characteristic when the associated diaper is wet;

a plurality of independent transmitters, each coupled to an associated one of the sensors, each transmitter having a quiescent mode when the associated diaper is dry and a transmission mode when the associated diaper is wet, each transmitter in a transmission mode transmitting independently bursts of electromagnetic energy signals at respective intervals;

a programming station for programming each of said independent transmitters with an identification code responsive to the identification of a respective patient;

a receiver for receiving the electromagnetic energy signal transmissions from each of said plurality of independent transmitters that is in its transmission mode, each electromagnetic energy signal transmission containing information responsive to the identification code of the associated transmitting independent transmitter; and

a control processor for processing the information in each transmission.

21. A system for indicating the wetness condition of a diaper, the system comprising:

a sensor coupled to the diaper, said sensor having a first predetermined electrical characteristic when the associated diaper is dry and a second predetermined electrical characteristic when the diaper is wet; and

UNITED STATES PATENT APPLICATION

H. GeorgePires

a confirmatory element, externally accessible, with a third predetermined electrical characteristic which remains unchanged when the diaper exhibits either the first or the second predetermined electrical characteristics.

22. The system of claim 21, wherein said confirmatory element is a resistor.

23. The system of claim 22, wherein the resistor has a resistance value of approximately ten thousand ohms.

24. A system for transmitting electromagnetic energy, the system comprising a transmitter having first, second, and third electrical terminals for coupling with first and second external devices, the first external device being coupled to the first and second electrical terminals and having first and second electrical characteristics responsive to environmental conditions, and the second external device being coupled to the second and third electrical terminals and having a substantially constant electrical characteristic, said transmitter having a quiescent mode when the first external device exhibits the first electrical characteristic, and a transmission mode when the first external device exhibits the second electrical characteristic and the substantially constant electrical characteristic of the second external device is present.

25. The system of claim 24, wherein said transmitter transmits electromagnetic energy when in the transmission mode, and when the second predetermined electrical characteristic is present across the first and second electrical terminals simultaneously with the substantially constant electrical characteristic of the second external device being present across the second and third electrical terminals.

UNITED STATES PATENT APPLICATION

H. GeorgePires

26. The system of claim 24, wherein the first and second electrical characteristics of the first external device constitute different levels of impedance responsive to environmental humidity.

27. The system of claim 24, wherein the substantially constant electrical characteristic of the second external device constitutes a predetermined electrical impedance.

28. The system of claim 27, wherein the substantially constant electrical characteristic of the second external device constitutes a predetermined electrical resistance.